has potential benefit as a basic educational tool for students and health professionals interested in exploring these analytical approaches.

CONCEPTUAL PAPERS & RESEARCH ON METHODS – Modeling Methods

PMC4

CHOOSING THE RIGHT DISTRIBUTION WHEN PERFORMING PROBABILISTIC SENSITIVITY ANALYSIS: RELATIVE RISKS AND THE TRIANGULAR DISTRIBUTION A SIMULATION STUDY

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OBJECTIVES: In economics the triangular distribution is often used when limited information is available for different parameters. This is also the case in health economic modeling when performing probabilistic sensitivity analysis (PSA). In PSA, distributions are assigned to input parameters in order to assess the uncertainty in the model. One of the main criticisms of PSA is that the distributions can be chosen arbitrarily. Analysts can thereby manipulate the choice of distributions to bias the results. This study investigates the usage of the triangular distribution for describing the uncertainty of relative risks (RR) compared to the lognormal distribution and empirical distribution RR generated through simulations. **METHODS:** Ten thousand simulations of the triangular distribution, the log normal distribution and relative risks constructed from two binomial distributions were performed. Descriptive statistics and graphical plots were constructed. **RESULTS:** The triangular distribution does not have the support of the full positive real axis and as such extreme values, such as very small and very large numbers, have a zero probability of being measured. However, values around the mode are prone to be drawn with a higher probability compared to both the exact values and the log normal distribution. The lognormal distribution tends to overestimate the RR compared to the empirical distribution. **CONCLUSIONS:** This study shows that the triangular distribution is a poor choice for characterizing the uncertainty of RR. The overestimation of the RR can introduce bias, for instance, if used for responder rates or death rates. The lognormal distribution appears to be a better approximation, but if the actual number of events and total number of exposed are available, the empirical simulation is of course preferred.

CONCEPTUAL PAPERS & RESEARCH ON METHODS – Patient-Reported Outcomes Studies

PMC6

ESTIMATING EQ-5D TARIFFS FOR MALAYSIA USING TIME TRADE OFF AND VISUAL ANALOGUE SCALE

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OBJECTIVES: This research aimed to estimate utility tariffs for Malaysia using Time Trade Off (TTO) and Visual Analogue Scale (VAS) valuations of the EQ-5D descriptive system. **METHODS:** TTO and VAS valuations were obtained from face to face surveys in 2004 and 2005 of 152 adult patients, their care-givers and health professionals at six government hospitals in Malaysia. The survey closely followed the methodology of EQ5D health states by Shaw et al. Forty-five EQ-5D health states were valued, divided into five sets of 15 health states each. Each respondent was asked to value one set of 15 health states. Each respondent performed a ranking, the VAS and TTO valuations. TTO allowed for scoring health states as worse than death. Linear additive regression models were performed. Dependent variables were the rescaled VAS and TTO values. Independent variables were two dummy variables for each of the five EQ-5D dimensions and two pre-defined interaction terms, N3 and D1. **RESULTS:** A total of 152 respondents were obtained with mean age 41 years and self-assessed VAS of 82. Respondents reported TTO valuations to be difficult or more difficult (16%) than VAS valuation (8%). A greater number of VAS valuations had no inconsistencies compared to TTO valuations (63% and 17% respectively). All N3 and D1 models were statistically significant. Goodness-of-fit was better in VAS models (adjusted R2 0.755 and 0.757) than N3 models (adjusted R2 0.424 and 0.412). All the independent variables in the models were statistically significant and theoretically consistent with expected signs and magnitude, with level 3 coefficients larger than level 2 coefficients for the same health dimension. **CONCLUSIONS:** Both N3 and D1 model specifications were applicable to Malaysian EQ-5D health valuations. VAS valuations appear to be better than TTO.

PMC7

TRANSLATING ITEM BANKS: BENEFITS AND CHALLENGES

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With the emergence of electronic data collection and efforts to reduce respondent burden, the use of item banks to measure health related constructs—especially within federally funded (NIH) research—has become more mainstream. Following the use and acceptance of Computer Adaptive Testing (CAT) in educational testing, item banks in health status assessment allow for better measurement of a construct across the measurement continuum. As with standard static questionnaires used in outcomes assessment, there is a need for multilingual translations of item banks in order to establish and compare item hierarchies across varying languages and cultures. Translation and validation of items contained in item banks presents interesting scientific opportunities for cross-cultural health assessment, but there are also attendant challenges to be addressed. This presentation will give a brief overview of the benefits of computer adaptive testing while outlining the most salient issues related to the evaluation of item difficulty and hierarchy. It will also highlight differences and unique challenges brought about by translating item banks. Topics such as maintaining consistent terminology, recall period and verb tense will be addressed and examples from our experience will be provided. Appropriate translation methodology, copyright issues and the role of both qualitative and quantitative data in the process will also be discussed as well as brief examples of how items that are similar linguistically and conceptually may have different item parameters in different languages.

PMC8

PREDICTING THE SF-6D PREFERENCE-BASED INDEX SCORE USING THE SF-8 HEALTH SURVEY

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OBJECTIVES: This study aimed to develop a function to predict the SF-6D index score from SF-8 scores. **METHODS:** This study was a secondary analysis of data collected in a population health survey in Singapore in which respondents (n = 7529) completed both the SF-36 and the SF-8 questionnaires. Four multiple linear regression models with different specifications were compared for their performance in predicting SF-6D scores calculated using responses to SF-8 items. **RESULTS:** The model in which responses to all SF-8 items were coded into dummy variables achieved the best prediction outcomes. The model explained 62% (other models: 56% to 62%) of the variance in the SF-6D index score with the mean absolute error being 0.056 (other models: 0.056 to 0.06100) and root mean square error being 0.076 (other models: 0.077 to 0.083). The absolute error between predicted and observed SF-6D scores was less than 0.1 and 0.05 among 84% and 59% of the respondents, respectively; this results for other modes were 77% to 84% and 51% to 56%. **CONCLUSIONS:** It is possible to generate a utility-based index score from the SF-8. The function developed in this study should be further tested in other populations.

CONCEPTUAL PAPERS & RESEARCH ON METHODS – Statistical Methods

PMC10

NONPARAMETRIC METHODS FOR VALUE OF INFORMATION ANALYSIS OF CLINICAL TRIALS

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While the value of information (VoI) methods have been developed for model based cost-effectiveness analyses (CEA), there is a gap in applying such methods to CEAs conducted alongside clinical trials. In the present it is shown that by treating the probability distribution of net benefits within each trial arm as a random quantity, calculations for the Expected Value of Sample Information (EVSI) for model-based CEAs can be extended to the setting of a trial-based CEA where individual net benefits from subjects are available. In this case EVSI calculates the expected return of investment from conducting a future trial with the similar design as a function of its sample size. Based on such analogy, a nonparametric method for EVSI calculation based on two-level bootstrap is introduced. At the first level, a Bayesian bootstrap (Rubin, 1981) from the vector of individual-level net benefits within each arm of the trial is performed. The empirical distribution of such a bootstrap sample amounts to a random draw from the 'posterior distribution of the distribution' of net benefits given the observed data. A second bootstrap from this sample then models the distribution of net benefits in the future study. The data of the future and current trials will be combined to identify the maximum net benefit and the cycle is repeated over several iterations. We also extend this framework to address parametric analysis (e.g., net benefit regression), missing values, and incorporation of external evidence. We use data from a randomized clinical trial of combination therapy in COPD as an application. Since the two-level bootstrap directly generates samples of the individual-level data for the future trial, it allows modeling realistic scenarios (e.g., missing values, complex statistical analysis). This, combined with the nonparametric nature of the method, should provide a robust framework for VoI analysis for trial-based CEAs.

MENTAL HEALTH – Clinical Outcomes Studies

PMH1

METABOLIC SYNDROME AND SECOND GENERATION ANTIPSYCHOTICS UTILIZATION—IMPACT OF PSYCHIATRIC COMORBIDITY AND POLYPHARMACY

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OBJECTIVES: Current studies examining metabolic effects associated with second generation antipsychotics (SGAs) do not consider the impact of psychiatric comorbidi-